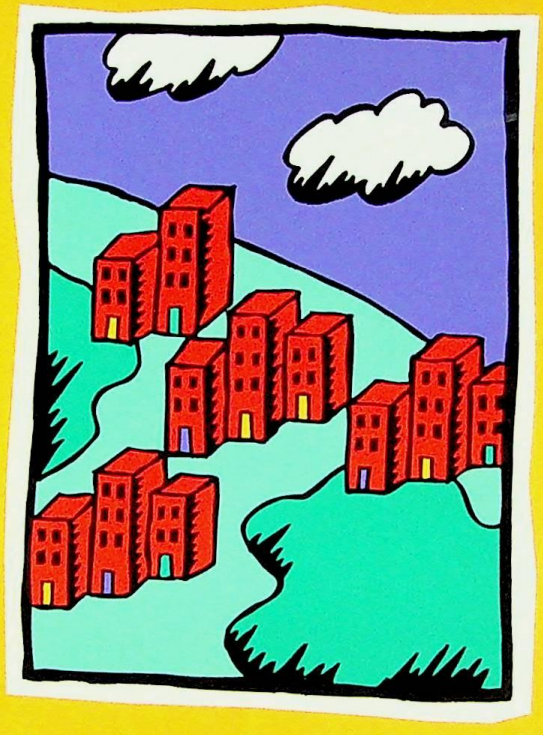
digital™



MEMORANDUM

TO: **Data Communications Managers**
Telecommunications Managers

RE: **The Global Challenge**

In the months and years ahead, you face the enormous challenge of providing a cost-effective networking infrastructure throughout your enterprise.

You will need to add functionality through new services while you improve interoperability among existing networks. The ultimate goals are to consolidate multiple networks and reduce operating costs, while expanding the reach of the network everywhere — touching everyone and increasing the level of services to users and departments. And you need to manage all these resources.

At Digital, we are committed to providing open technologies that give you the backbone networks, multivendor integration, and products and services you need, worldwide. We are flexible and can play many different roles. When you need a full-service network integrator, we have the products, the programs, and the experience to provide everything you need from one source. Where you need components that play well in your overall networking strategy, we have an array of award-winning products to meet those needs, as well. And, we have solutions for managing both data and voice.

What it comes down to is maximizing the communications and information resources you have while ensuring that the network is available whenever and wherever it is needed. The solution is Digital.

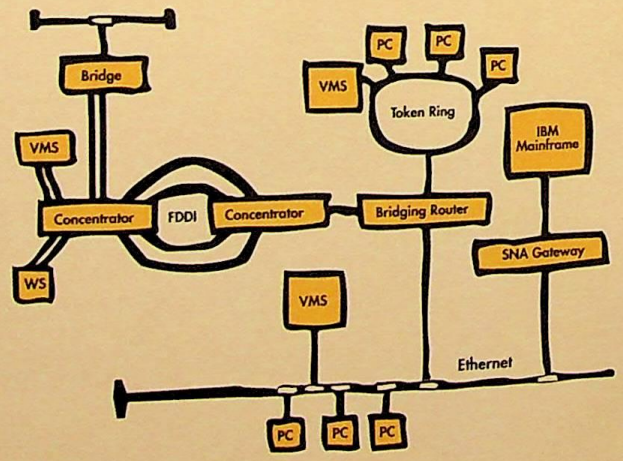
This package was developed to give you easy access to straight answers about our solutions for enterprise networks. As you investigate your options here and elsewhere, we think you'll see what we mean when we say Digital is the Open Advantage.

Networks Marketing
Digital Equipment Corporation

CHALLENGE

Your primary motive is to run a tighter ship — better communications, operations, and financial control across the enterprise worldwide. It is also imperative, in today's global market, to link your company more closely to suppliers and customers, to reduce cycle times, and provide quality service.

To do this, you need to connect workgroups, departments, and divisions all over the world. This generally means that you have multiple LAN solutions (FDDI, Ethernet, Token Ring) and you have to tie them all together, perhaps globally and definitely cost-effectively.



Universal Connectivity

At the heart of Digital's ADVANTAGE-NETWORKS is a full suite of standards-based multiprotocol wide area network (WAN) solutions for interconnecting local area networks (LANs). This gives you the ability to build backbone networks using Digital's high-performance network integration servers. And your smaller sites can take advantage of your backbone network with cost-effective access routers and bridges.

For today's organizations, with their diverse networking schemes, the integration of Ethernet, Token Ring, and FDDI is extremely important. It means that you can link existing environments — namely Ethernet and Token Ring — so that they complement each other and share resources. And now you have the added advantage of forward integration of new technologies like FDDI. With Digital's open, standards-based solutions, you can tie them all together in a simple, seamless and cost-effective environment.

LAN Interconnect Platforms

Digital's Network Integration Servers (DECNIS) are a family of high-performance platforms for building global LAN interconnect backbones. These integration server platforms are configurable and will integrate the diversity of LAN and WAN technologies you have today and those you may choose in the future. They allow you to add and change interfaces and functionality as you need to.

You get the functionality you need for routing, local and remote bridging, and X.25 gateway services. And because the DECNIS platform is based on a distributed architecture, total platform performance is not limited by a central processor. Instead, with processing power resident on each network interface card, the total performance of the box actually increases with the number of LANs and WANs you connect.

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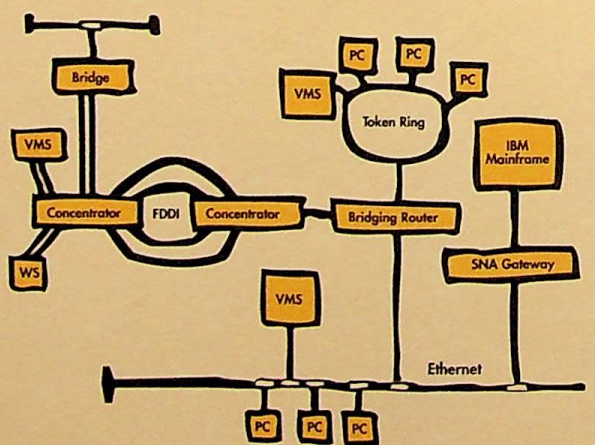

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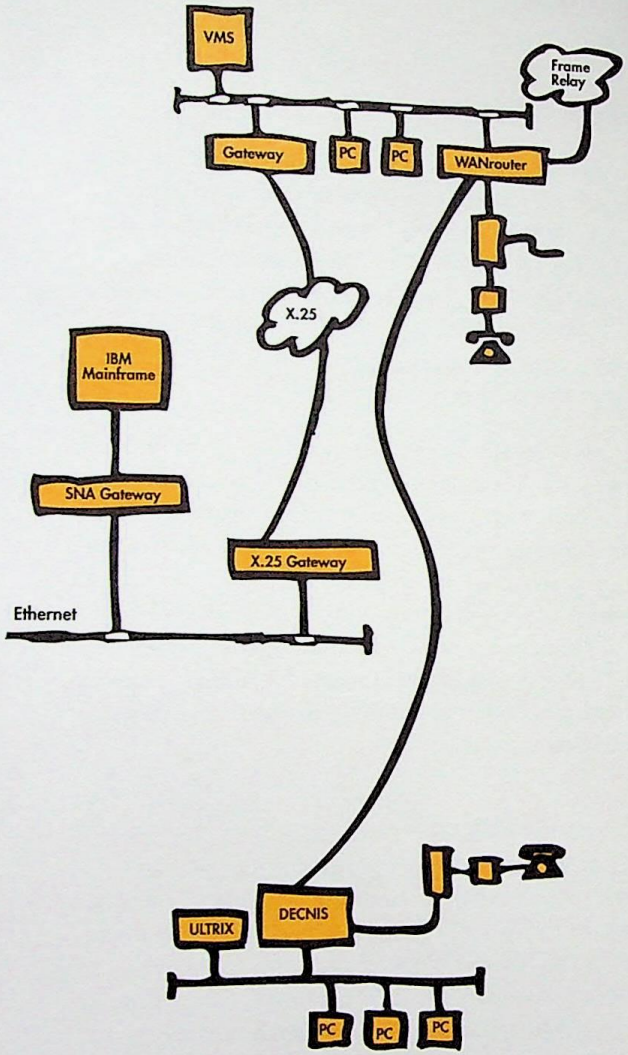


Because Digital knows that your network backbone must run nonstop, Digital's DECNIS integration servers feature "hot swap" capabilities. You can change and add LAN and WAN interface cards while the router is running, without disrupting operations on the installed interface cards. And you can easily down-line load network upgrades remotely from a single central point. This saves employee time and operating dollars, and ensures that all the right upgrades and changes are made correctly at the same time.

Digital has a full complement of products that provide cost-effective access to the LAN interconnect backbone for single users and PC networks. WANrouters provide access to remote sites and branch offices for various traffic volumes, from light to heavy. All of these routers support multiprotocol routing.

Frame Relay

You need to maximize the performance of your LAN interconnect over the wide area while minimizing your costs. Frame Relay is a standards-defined packet-mode service that increases the efficiency of LAN-to-LAN communications over the wide area. It is ideal for bursty traffic, has low error rates, and causes minimal network delay. And because Frame Relay gives you full-mesh connectivity at a fraction of the cost, it can save you money as well.

Digital gives your LANs access to these services by supporting frame relay on its multiprotocol routers and network integration servers.

Transmission Backbones

You want to get more out of your costly bandwidth by sharing it between your Frame Relay, other data, voice, and video traffic. Digital offers IPX nodal processors which use fast packet (that is, ATM) switching technology. Fast packet switching is ideal for maximizing Frame Relay performance. Digital provides transmission backbone solutions based on fast packet technology to help you build high-performance and cost-effective network backbones.

ADVANTAGE

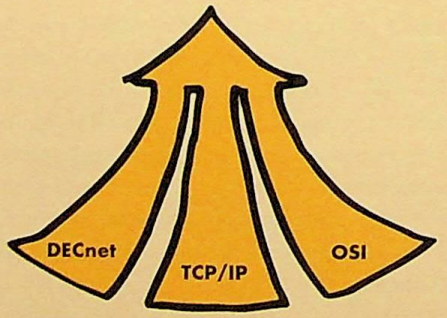
The advantage of universal connectivity is the confidence that comes from knowing that Digital links all the pieces of your network and makes them play together. This is the first step toward a network infrastructure, and it means that yesterday's investments, today's choices, and tomorrow's enhancements will all join together to form a single information utility. ■

CHALLENGE

You have to create worldwide links. But more than just the links, you're building an information and communications infrastructure that has long-term value and impact to the profitability of the business. You need a transparent infrastructure of multiple technologies and protocols that you manage globally.

Typical of many businesses, you may have to handle a variety of access requirements. You probably operate a number of protocols in different locations, all of which have to be linked over a WAN.

ADVANTAGE-NETWORKS



ADVANTAGE

With Digital, you are working with a company that understands the needs for multiprotocol access across the entire network, has the solutions, and knows how to implement them. The advantage to you is better communications across the globe to every part of your enterprise. ■

Universal Access

The physical connection of the network is only the beginning. Enterprise solutions need to address logical connections as well, and in this area the real challenges are to provide universal access to users and systems no matter what their communications protocol.

Multiple Protocols

Digital provides you with a transparent networking environment, that offers you the broadest choice of integration options available — TCP/IP, OSI, DECnet, AppleTalk, IPX, or others. You have universal access to all environments over the network using Digital's DECNIS network integration servers.

Integrated IS-IS

Digital realizes that yesterday's best router might not be the best router today, and today's might not be the best choice tomorrow. To assure interoperability with other router vendors, Digital implements the standard Integrated IS-IS router-to-router communications protocol, or routing protocol, for multiprotocol environments. Other major router vendors have committed to implementing Integrated IS-IS. This routing protocol will route your TCP/IP, DECnet, and OSI traffic today and is being extended to route all major PC LAN protocols, as well.

Simply put, integrated routing protocols save you money when you need to do multiprotocol routing. One routing protocol that serves multiple protocols uses less CPU overhead than does running multiple routing protocols. An integrated routing protocol will also use your costly bandwidth more efficiently. Finally, because you have one routing protocol to implement rather than several, integrated routing protocols are easier to deploy and manage.

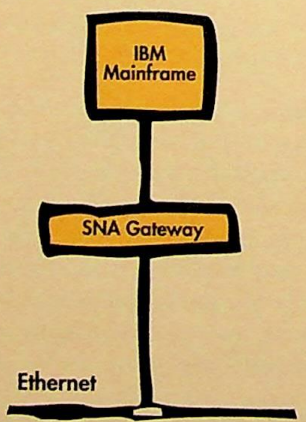
Digital's continuing development of Integrated IS-IS is another proof of its ongoing commitment to open standards that make your job easier.

CHALLENGE

Yours is a multivendor reality. You have users and departments on many different systems — sometimes it may even seem like every system ever invented. In the past, that wasn't so big a problem, because each user and department was pretty well self-contained.

Now, they want — and often need — to communicate with one another and share files and applications. They have to correspond and collaborate quickly across every time zone, no matter what system they're using.

Today, across the entire enterprise, the systems have to interoperate.



Unrestricted Interoperability

Not only does Digital link your networks, but we ensure that the systems on those networks, from one end to the other, will interoperate. Digital has a complete set of solutions to ensure network interoperability.

Gateways to IBM

With Digital's extensive IBM gateway solutions users can utilize and share information between different, multi-variant environments. Digital offers DECnet/SNA and ULTRIX/SNA gateways for TCP/IP, DECnet, VMS, and ULTRIX connections into SNA networks. Traditional Digital and UNIX users can coexist with SNA and benefit from each other's data and applications. The gateways allow:

- File transfer — The ability to move information from one environment to the other.
- Applications integration — The ability to share applications across the two environments.

Interoperating between TCP/IP and DECnet

Integration with your SNA environment is key, but you also need to interoperate between VMS/DECnet and ULTRIX/TCP/IP environments. Digital offers two solutions. You can either add TCP/IP onto your VMS systems, using Digital TCP/IP services for VMS, or you can gateway between the two environments using Digital's VMS/ULTRIX gateway.

Your VMS, UNIX, and SNA users can now collaborate as never before.

Interoperating between TCP/IP and OSI

TCP/IP and OSI are today's primary open network protocols. Digital provides connections between TCP/IP and OSI through the use of parallel protocol stacks and application-layer gateways. Through the use of RFC1006, OSI applications can use TCP/IP backbones as a transport.

Applications

The excellence of Digital's ADVANTAGE-NETWORKS lies in its ability to provide multivendor interoperability for your applications as well as seamless multiprotocol connectivity for your networks, the transportation system for your applications. The key to applications interoperability from Digital is the client-server computing model implemented in Digital's Network Applications Support (NAS) environment.

Digital's ADVANTAGE-NETWORKS now support more than 850,000 nodes.

Network Application Support

NAS is Digital's open system for integrating applications across distributed multivendor environments and platforms — recognizing the mixed platform realities of today's companies. NAS is not only a blueprint for application integration, it is a suite of software products, including application programming interfaces, run-time services, and documentation.

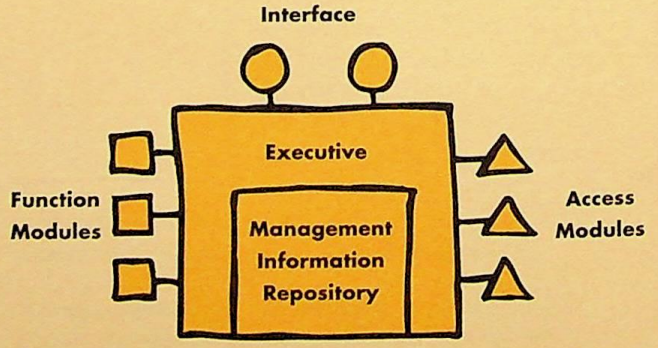
A range of platforms — from desktop systems to large computing resources — are tied together using NAS. NAS is a client/server model based on the concept of peer-to-peer computing. With NAS you get a suite of standards specifications that allow applications to conform and work together. Ultimately, this simplifies the application development process, improves users' productivity, and protects your technology investment.

ADVANTAGE

Interoperability gives you choice and flexibility. It allows users and departments to select the best solutions for their needs while ensuring that those choices won't cut them off from the rest of the organization. The result is better productivity and greater collaboration throughout the enterprise. With Digital, you have a single vendor with the broad frame of reference needed to recognize these multivendor realities and experienced enough to provide the truly open solutions. □

CHALLENGE

Openness can be a real headache if you cannot manage it. What's critical to your business is that this infrastructure and all its resources are up 24 hours a day across the globe. You need to manage the entire network effectively, on a global scale, transferring point of management and control across the network–providing local management of local parameters and remote management of network-wide parameters. You need to be able to manage all the components of the network no matter who made them or where they reside.



Universal Management

Your Enterprise Network is, or will be, made up of an enormous variety of solutions — Ethernet backbones connected to FDDI in one place, Token Ring in another. Your environment is multivendor and multiprotocol. With Digital, you can manage it all with an architecture designed for your multivendor environment.

Digital's approach for comprehensive management solutions is EMA (Enterprise Management Architecture). Based on standards, EMA applies Digital's experience and innovations directly to your management needs. EMA is a result of Digital's experience in putting together complex multivendor networks and systems, and its design has influenced standards development.

Products based on EMA provide multivendor, multiprotocol solutions that encompass all types of information (voice, data, image, and video), and many different technologies, networks, systems, applications, and databases. As a result, Digital addresses all life-cycle phases — from planning, to design, to implementation, to management.

Within the EMA framework, a system can collect information across multiple technologies while applying management functions to all of them without regard to their origin — presenting the information using workstation graphics or character cell terminals. The EMA diagram depicts the modules that accomplish this.

On the right side of the diagram, the Access Modules do protocol conversion for such things as network devices, computer systems, and applications. This enables the management station to access any device on the network.

On the left, the Function Modules are management applications. Functions can be generic or technology-specific. Generic functionality provides a degree of "blind extensibility" that enables common management for different types of devices and technologies. Function Modules exist for such functions as configuration management, performance analysis, and fault alarming.

On top, Presentation Modules present this information using either workstation graphics or character cell terminals — allowing flexibility in how a user chooses to manage the environment.

All these technologies and products are intended to help make your business more profitable — with higher quality products, faster time to market, higher productivity, and improved customer satisfaction.

These things go straight to the bottom line, and they also hit the top line too, because they protect that investment as you exercise your freedom to choose and power to use.

DECmcc for Network and Systems Management

EMA is implemented through the DECmcc product family. DECmcc does both network and system management to ensure that you are making the best use of the network resource and utility. DECmcc is modular and expandable to accommodate growth and change. It provides you with the tools to manage and maintain the network infrastructure at reduced cost. And DECmcc doesn't stop with Digital's products — it is a multivendor, multisite management tool that can help you administer all your network resources.

What DECmcc gives you is the ability to reduce costs while at the same time allowing you to manage and maintain the network and information infrastructure so vital to your competitive success. It allows you to manage information as a corporate asset rather than as an overhead expense. The key here is that DECmcc is a multivendor solution — encompassing, monitoring, and managing all the information resources on your network.

Digital's management solutions address the needs of small networks as well as large enterprise networks. For smaller networks, capabilities that are already built into DECnet may be all that are required for effective management.

Management is a critical aspect of the system. And DECmcc is the system management system of choice. It manages across multiple protocols, covering multiple vendors' devices, and applying a range of functions from alarms to performance characteristics.

ADVANTAGE

The real benefit here is that you make more efficient and effective use of critical information and network resources. Networking represents a significant investment, and the better you manage it — not as an expense item, but as a critical corporate asset — the more it will pay back in productivity and profitability. ■

THE OPEN ADVANTAGE

The combination of these solutions means that your enterprise has universal connectivity and real-time access to the information needed to make timely decisions and develop effective plans. And this happens across all networks and protocols.

No matter the number of time zones your business spans, you can maximize your resources and your investment. This all means that you have the flexibility to grow and connect on a global basis — a capability that will show up on your bottom line.

Worldwide Network Integration Services

In today's environment a successful enterprise must have a fully integrated network infrastructure that supports your business strategies. Digital offers full worldwide network integration services to help you plan, design, implement, and manage your network no matter who manufactured the pieces. That's because Digital's strategy is based on an open environment — Open Technology, Open Services, and Open Business Practices.

Digital is the Performance Leader in Open Networks — with products and services available to you anytime, any place for any solution . . . from smaller Desktop Networks . . . to Campus Networks. . . to Enterprisewide Integration.

Digital . . . The Open Advantage

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